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CP-201300001
TXX-13002

Ref. # 10CFR50.73

January 16, 2013

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555-0001

SUBJECT: COMANCHE PEAK NUCLEAR POWER PLANT (CPNPP)
DOCKET NO. 50-446
UNIT 2 AUTOMATIC REACTOR TRIP DUE TO
LOW STEAM GENERATOR WATER LEVEL
LICENSEE EVENT REPORT 446/12-002-00

Dear Sir or Madam:

Pursuant to 10CFR50.73(a)(2)(iv)(A), Luminant Generation Company LLC (Luminant Power) hereby submits enclosed Licensee Event Report (LER) 446/12-002-00, "Unit 2 Automatic Reactor Trip Due to Low Steam Generator Water Level" for Comanche Peak Nuclear Power Plant (CPNPP) Unit 2.

This communication contains no licensing basis commitments regarding CPNPP Units 1 and 2.

Should you have any questions, please contact Jack Hicks at (254) 897-6725.

Sincerely,

Luminant Generation Company LLC

Rafael Flores

By: Fred W. Madden
Fred W. Madden
Director, Oversight & Regulatory Affairs

IE22
NRR

Enclosure

c - E. E. Collins, Region IV
B. K. Singal, NRR
Resident Inspectors, Comanche Peak

NRC FORM 366 (10-2010) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB NO. 3150-0104 EXPIRES 10/31/2013

Estimated burden per response to comply with this mandatory information collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the FOIA/Privacy Section (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects.resource@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202 (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

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4. TITLE

UNIT 2 AUTOMATIC REACTOR TRIP DUE TO LOW STEAM GENERATOR WATER LEVEL

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
11	17	2012	2012	- 002 -	00	01	16	2013	FACILITY NAME	DOCKET NUMBER

9. OPERATING MODE

1

10. POWER LEVEL

100

11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)

- ☐ 20.2201(b)
- ☐ 20.2201(d)
- ☐ 20.2203(a)(1)
- ☐ 20.2203(a)(2)(i)
- ☐ 20.2203(a)(2)(ii)
- ☐ 20.2203(a)(2)(iii)
- ☐ 20.2203(a)(2)(iv)
- ☐ 20.2203(a)(2)(v)
- ☐ 20.2203(a)(2)(vi)
- ☐ 20.2203(a)(3)(i)
- ☐ 20.2203(a)(3)(ii)
- ☐ 20.2203(a)(4)
- ☐ 50.36(c)(1)(i)(A)
- ☐ 50.36(c)(1)(ii)(A)
- ☐ 50.36(c)(2)
- ☐ 50.46(a)(3)(ii)
- ☐ 50.73(a)(2)(i)(A)
- ☐ 50.73(a)(2)(i)(B)
- ☐ 50.73(a)(2)(i)(C)
- ☐ 50.73(a)(2)(ii)(A)
- ☐ 50.73(a)(2)(ii)(B)
- ☐ 50.73(a)(2)(iii)
- ☒ 50.73(a)(2)(iv)(A)
- ☐ 50.73(a)(2)(v)(A)
- ☐ 50.73(a)(2)(v)(B)
- ☐ 50.73(a)(2)(v)(C)
- ☐ 50.73(a)(2)(v)(D)
- ☐ 50.73(a)(2)(vii)
- ☐ 50.73(a)(2)(viii)(A)
- ☐ 50.73(a)(2)(viii)(B)
- ☐ 50.73(a)(2)(ix)(A)
- ☐ 50.73(a)(2)(x)
- ☐ 73.71(a)(4)
- ☐ 73.71(a)(5)
- ☐ OTHER Specify in Abstract below or in NRC Form 366A

12. LICENSEE CONTACT FOR THIS LER

FACILITY NAME	TELEPHONE NUMBER (*Include Area Code*)
Timothy A. Hope, Manager, Nuclear Licensing	254-897-6370

13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX

14. SUPPLEMENTAL REPORT EXPECTED

☐ YES (If yes, complete 15. EXPECTED SUBMISSION DATE) ☒ NO

15. EXPECTED SUBMISSION DATE

MONTH	DAY	YEAR

ABSTRACT (*Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines*)

On November 17, 2012, Comanche Peak Nuclear Power Plant (CPNPP) Unit 2 was in Mode 1 operating at 100% power. At 1023 hours, the Unit 2 reactor automatically tripped due to low steam generator water level. All control rods fully inserted and all three Auxiliary Feedwater pumps started as expected as a result of the reactor trip. All systems responded normally during and following the event.

The cause of this event was the planning process did not provide instructions for mounting the air pressure regulator for the Heater Drain pump discharge valve. The valve was reassembled without properly supporting the pressure regulator which allowed vibration to occur in the tubing. This eventually caused a swage-lok fitting fatigue failure which resulted in the loss of air and closure of the Heater Drain pump discharge valve. This resulted in the loss of one main Feedwater pump and an automatic reactor trip on low steam generator water level.

Immediate corrective actions included replacement of the broken fitting and mounting of the air pressure regulator to the actuator of the Heater Drain pump discharge valve. As a part of the CPNPP Corrective Action Program, procedures will be revised to ensure that the planning process contains specific instructions for installation of an alternate part if required.

All times in this report are approximate and Central Time unless noted otherwise.

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NARRATIVE

I. DESCRIPTION OF THE REPORTABLE EVENT

A. REPORTABLE EVENT CLASSIFICATION

10CFR50.73(a)(2)(iv)(A), Any event or condition that resulted in manual or automatic actuation of any of the systems listed in paragraph (a)(2)(iv)(B) of this section including:

10CFR50.73(a)(2)(iv)(B)(1), Reactor protection system including: reactor scram or reactor trip

10CFR50.73(a)(2)(iv)(B)(6), PWR auxiliary or emergency feedwater system

B. PLANT CONDITION PRIOR TO EVENT

On November 17, 2012, CPNPP Unit 2 was in Mode 1 operating at 100% power.

C. STATUS OF STRUCTURES, SYSTEMS, OR COMPONENTS THAT WERE INOPERABLE AT THE START OF THE EVENT AND THAT CONTRIBUTED TO THE EVENT

There were no structures, systems, or components that were inoperable at the start of the event that contributed to the event.

D. NARRATIVE SUMMARY OF THE EVENT, INCLUDING DATES AND APPROXIMATE TIMES

On November 17, 2012, Comanche Peak Nuclear Power Plant (CPNPP) Unit 2 was in Mode 1 operating at 100% power. At 10:19, the fitting between the Unit 2 Heater Drain Pump Discharge Valve Pressure Regulator [EIIS: (SM)(P)(V)(RG)] and the adjacent in-line filter failed. The loss of air caused the Heater Drain Pump Discharge Valve to close as designed. This resulted in a total loss of Heater Drain Flow. The loss of flow resulted in a lowering feed pump suction pressure. The Condensate Low Pressure Feedwater Heater Bypass Valve and the Condensate Polishing Filter Bypass Pressure Control Valve opened on low feed pump suction pressure. At 1020 hours, Operators (Utility, Licensed) in the Unit 2 Control Room received several secondary alarms indicating a decrease in main Feedwater pump suction pressure. The control room operators properly responded to the plant indications per ABN-302, "Feedwater, Condensate, Heater Drain System Malfunction", and initiated a runback to 900 MWe. Prior to reaching 900 MWe at 10:21, Main Feed pump 2A tripped and auto initiated a runback to 700 MWe. Once Unit 2 was at 700 MWe, Steam Generator (SG) water levels were at approximately 43% and appeared to be stabilizing. The Reactor Operator (RO) noted a mismatch in steam flow and feed flow. The RO attempted to initiate an additional 100 MWe runback when the steam dumps closed as expected for the plant response. The closure of the steam dumps lowered steam flow and resulted in shrink in the Steam Generators causing all four Steam Generator water levels to decrease. When SG 2-03 reached 35.4%, an automatic reactor trip occurred at 10:23. All control rods fully inserted, and both Motor Driven Auxiliary Feedwater Pumps and the Turbine Driven Auxiliary Feedwater Pump started as expected as a result of the reactor trip.

E. THE METHOD OF DISCOVERY OF EACH COMPONENT OR SYSTEM FAILURE, OR PROCEDURAL PERSONNEL ERROR

Operators (Utility, Licensed) in the Unit 2 Control Room received alarms indicating a loss of main feedwater pump suction pressure.

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NARRATIVE

II. COMPONENT OR SYSTEM FAILURES

A. CAUSE OF EACH COMPONENT OR SYSTEM FAILURE

Not applicable – there were no component failures associated with this event. The valve functioned as expected with the loss of instrument air.

B. FAILURE MODE, MECHANISM, AND EFFECTS OF EACH FAILED COMPONENT

Not applicable – there were no component failures associated with this event.

C. SYSTEMS OR SECONDARY FUNCTIONS THAT WERE AFFECTED BY FAILURE OF COMPONENTS WITH MULTIPLE FUNCTIONS

Not applicable - there were no component or system failures associated with this event.

D. FAILED COMPONENT INFORMATION

Not applicable – there were no component failures associated with this event.

III. ANALYSIS OF THE EVENT

A. SAFETY SYSTEM RESPONSES THAT OCCURRED

Both Motor Driven Auxiliary Feedwater Pumps and the Turbine Driven Auxiliary Feedwater Pump started as expected as a result of the reactor trip.

B. DURATION OF SAFETY SYSTEM TRAIN INOPERABILITY

Not applicable - No safety system trains were inoperable during this event.

C. SAFETY CONSEQUENCES AND IMPLICATIONS OF THE EVENT

This event is bounded by the CPNPP Final Safety Analysis Report (FSAR) accident analysis which assumes conservative initial conditions which bound the plant operating range and other assumptions which reduce the capability of safety systems to mitigate the consequences of the transient.

A loss of normal Feedwater resulting from pump failure, valve malfunction, or loss of offsite power leads to a reduction in the capability of the secondary system to remove heat generated in the reactor core. These events are analyzed in Section 15.2.7 of the CPNPP FSAR which uses conservative assumptions in the analysis to minimize energy removal capability of the Auxiliary Feedwater system.

The event of November 17, 2012, occurred at 100 percent reactor power, and all safety systems functioned as designed. The event is bounded by the FSAR accident analysis that assumes an initial power level of 102 percent and the worst single failure in the Auxiliary Feedwater system for a loss of Feedwater event. There were no safety system functional failures associated with this event. The FSAR analysis shows that a loss of normal Feedwater does not adversely affect the core, the reactor coolant system, or the steam system. Therefore, this event posed no threat to the health and safety of the public.

Based on the above, it is concluded that the health and safety of the public were unaffected by this condition and this event has been evaluated to not meet the definition of a safety system functional failure per 10CFR50.73(a)(2)(v).

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NARRATIVE

IV. CAUSE OF THE EVENT

The cause of this event was that the planning process did not provide instructions for mounting the air pressure regulator for the Heater Drain pump discharge valve. The valve was reassembled without properly supporting the pressure regulator which allowed vibration to occur in the tubing. This eventually caused a swage-lok fitting fatigue failure which resulted in the loss of air and closure of the Heater Drain pump discharge valve. This resulted in the loss of one main Feedwater pump and an automatic reactor trip on steam generator low level.

V. CORRECTIVE ACTIONS

Immediate corrective actions included replacement of the broken fitting and mounting of the air pressure regulator to the actuator of the Heater Drain pump discharge valve.

A comprehensive walkdown of Unit 1 and Unit 2 secondary system air operated valves was conducted by a multi-disciplined team to identify other potential issues with the mounting of valve operator sub-components. One other condition was found with the regulator installed without direct mounting. If the valve was to fail due to loss of air the condition would not result in a reactor trip. This issue is being addressed in the CPNPP Corrective Action Program.

As a part of the CPNPP Corrective Action Program, procedures will be revised to ensure that the planning process contains specific instructions for the installation of an alternate part as appropriate.

VI. PREVIOUS SIMILAR EVENTS

There have been no previous similar reportable events at CPNPP in the last three years.